Patent claims:

1. Process for the preparation of enantiomerically enriched organic compounds in a coupled enzymatic reaction system, comprising a first enzymatic transformation of an organic substrate, NAD(P)H being consumed, and the regeneration of the NAD(P)H in a second enzymatic transformation by a malate dehydrogenase, with oxidation of L-malic acid to pyruvate and CO_2,
characterized in that
the pyruvate formed from the second enzymatic transformation is not employed as the substrate in the first enzymatic transformation.

2. Process according to claim 1,
characterized in that
the first enzymatic transformation proceeds using an alcohol dehydrogenase or amino acid dehydrogenase.

3. Process according to claim 2,
characterized in that
an ADH from *Lactobacillus kefir* or *Rhodococcus erythropolis* is used as the alcohol dehydrogenase and a leucine dehydrogenase or phenylalanine dehydrogenase is used as the amino acid dehydrogenase.

4. Process according to one or more of the preceding claims
characterized in that
a malate dehydrogenase from *E. coli*, in particular *E. coli* K12, is used.

5. Process according to one or more of the preceding claims
characterized in that
the reaction is carried out in an aqueous single- or multi-phase solvent mixture.

6. Process according to one or more of the preceding claims,
characterized in that
the temperature during the reaction is between 20 and 40°C.

7. Process according to one or more of the preceding claims,
characterized in that
the pH during the reaction is between 6 and 9.

8. Coupled enzymatic reaction system for the preparation of enantiomerically enriched organic compounds, comprising a first enzymatic transformation of an organic substrate, NAD(P)H being consumed, and the regeneration of the NAD(P)H in a second enzymatic transformation by a malate dehydrogenase, with oxidation of L-malic acid to pyruvate and CO_2,
characterized in that
the pyruvate formed from the second enzymatic transformation is not employed as the substrate in the first enzymatic transformation.

9. Whole cell catalyst comprising a cloned gene for a first enzyme for transformation of an organic substrate and a cloned gene for a malate dehydrogenase, this being capable of preparation of an enantiomerically enriched organic compound in a first enzymatic transformation, NAD(P)H being consumed, and of allowing the regeneration of the NAD(P)H to take place in a second enzymatic transformation by malate dehydrogenase, with oxidation of L-malic acid to pyruvate and CO_2, wherein the pyruvate formed from the second enzymatic transformation is not employed as the substrate in the first enzymatic transformation.

10. Plasmids containing gene constructs in which the gene for a malate dehydrogenase and a gene for an enzyme

for transformation of an organic substrate with consumption of NAD(P)H are present.